200 Linux Interview Q&A

1. What is Linux?

Answer: Linux is an open-source, Unix-like operating system kernel developed by Linus Torvalds. It is widely used in servers, desktops, mobile devices, and embedded systems.

2. What is the difference between Linux and Unix?

Answer: Linux is an open-source Unix-like operating system kernel, while Unix is a proprietary operating system developed by AT&T Bell Labs. Unix requires a license, whereas Linux is free and open-source.

3. Explain the Linux file system hierarchy.

Answer: The Linux file system hierarchy is structured in a tree-like format starting from the root directory (/). Important directories include /bin, /etc, /home, /var, /usr, and /tmp.

4. What is the root account?

Answer: The root account is the superuser account in Linux with unrestricted access to all commands, files, and system resources. It is used for system administration tasks.

5. How do you change file permissions in Linux?

Answer: Use the chmod command. For example, to set read, write, and execute permissions for the owner and read permissions for others, use:

```
chmod 744 filename
```

6. What is the difference between `su` and `sudo`?

Answer: `su` switches the user to the root account, requiring the root password. `sudo` allows a permitted user to execute a command as the superuser or another user, requiring the user's password.

7. How do you check the current runlevel?

Answer: Use the `runlevel` command:

```
runlevel
```

8. How do you list all installed packages in a Debian-based system?

Answer: Use the `dpkg` command:

```
dpkg --list
```

9. How do you view running processes in Linux?

Answer: Use the `ps` or `top` command. For a snapshot:

```
ps aux
```

For a dynamic view:

```
top
```

10. What is the use of the `grep` command?

Answer: `grep` searches for patterns within files. For example, to search for "error" in a file:

```
grep "error" filename
```

11. How do you display disk usage of directories?

Answer: Use the `du` command:

```
du -sh /path/to/directory
```

12. How do you check free disk space?

Answer: Use the `df` command:

```
df -h
```

13. What is a symbolic link?

Answer: A symbolic link is a type of file that points to another file or directory. It is created using the ln -s command:

```
ln -s /path/to/target /path/to/link
```

14. How do you find files containing a specific string?

Answer: Use the grep command with -r for recursive search:

```
grep -r "search_string" /path/to/directory
```

15. How do you compress files using tar?

Answer: Use the tar command with -czf to create a compressed archive:

```
tar -czf archive.tar.gz /path/to/directory
```

16. How do you extract files from a tar archive?

Answer: Use the tar command with -xzf to extract:

```
tar -xzf archive.tar.gz
```

17. How do you find the IP address of your system?

Answer: Use the ip or ifconfig command:

```
ip addr show
```

or

```
ifconfig
```

18. How do you view the contents of a file?

Answer: Use commands like cat, less, or more. For example:

```
cat filename
```

19. How do you change the hostname of a Linux system?

Answer: Use the hostnamectl command:

```
sudo hostnamectl set-hostname newhostname
```

20. What is the crontab command used for?

Answer: crontab is used to schedule jobs (commands or scripts) to run periodically. For example, to edit the crontab file:

```
crontab -e
```

21. How do you add a user in Linux?

Answer: Use the adduser command:

```
sudo adduser username
```

22. How do you delete a user in Linux?

Answer: Use the deluser command:

```
sudo deluser username
```

23. How do you switch to another user account?

Answer: Use the su command:

```
su - username
```

24. How do you change file ownership?

Answer: Use the chown command:

```
sudo chown user:group filename
```

25. How do you view system logs?

Answer: Use the journalctl command for systemd logs or tail for log files. For example:

```
journalctl
```

or

```
tail -f /var/log/syslog
```

26. How do you kill a process by its PID?

Answer: Use the kill command:

```
kill PID
```

27. How do you forcefully kill a process?

Answer: Use the kill -9 command:

```
kill -9 PID
```

28. How do you find the PID of a process by its name?

Answer: Use the pgrep command:

```
pgrep processname
```

29. What is a package manager?

Answer: A package manager automates the process of installing, upgrading, configuring, and removing software packages. Examples include APT for Debian-based systems and YUM/DNF for Red Hat-based systems.

30. How do you update all packages in a Debian-based system?

Answer: Use the apt update and apt upgrade commands:

```
sudo apt update
sudo apt upgrade
```

31. How do you install a package in a Red Hat-based system?

Answer: Use the yum or dnf command:

```
sudo yum install package_name
```

or

```
sudo dnf install package_name
```

32. How do you remove a package in a Debian-based system?

Answer: Use the apt remove command:

```
sudo apt remove package_name
```

33. What is the difference between apt-get and apt?

Answer: apt is a higher-level interface for package management, providing a more user-friendly set of commands that include the functionality of apt-get, apt-cache, and other lower-level tools.

34. What is the `find` command used for?

Answer: `find` is used to search for files and directories based on various criteria. For example, to find all `.txt` files:

```
find /path/to/search -name "*.txt"
```

35. How do you count the number of lines, words, and characters in a file?

Answer: Use the `wc` command:

```
wc filename
```

36. What is the purpose of the `/etc/passwd` file?

Answer: The `/etc/passwd` file contains user account information, including username, user ID, group ID, home directory, and shell.

37. What is the `/etc/shadow` file?

Answer: The `/etc/shadow` file contains encrypted user passwords and additional account information like password expiration.

38. How do you display the last 10 lines of a file?

Answer: Use the `tail` command:

```
tail filename
```

39. How do you display the first 10 lines of a file?

Answer: Use the `head` command:

```
head filename
```

40. How do you combine multiple files into one?

Answer: Use the `cat` command:

```
cat file1 file2 > combined_file
```

41. What is the purpose of the `/etc/fstab` file?

Answer: The `/etc/fstab` file contains information about file systems and their mount points, specifying how and where they should be mounted.

42. How do you mount a file system?

Answer: Use the mount command:

sudo mount /dev/sdX1 /mnt

43. How do you unmount a file system?

Answer: Use the umount command:

sudo umount /mnt

44. What is the purpose of the /proc directory?

Answer: The /proc directory is a virtual file system providing information about system processes and kernel parameters.

45. How do you change the current directory?

Answer: Use the cd command:

cd /path/to/directory

46. How do you display the current directory?

Answer: Use the pwd command:

pwd

47. How do you create a new directory?

Answer: Use the mkdir command:

mkdir new_directory

48. How do you remove an empty directory?

Answer: Use the rmdir command:

rmdir empty_directory

49. How do you remove a directory and its contents?

Answer: Use the rm -r command:

rm -r directory_name

50. What is the purpose of the /etc/hosts file?

Answer: The /etc/hosts file maps hostnames to IP addresses, providing a way to associate names with IP addresses without using DNS.

51. How do you display all open network connections?

Answer: Use the netstat command:

```
netstat -tuln
```

52. What is the ifconfig command used for?

Answer: ifconfig is used to configure network interfaces, assign IP addresses, and manage network connections. However, ip is recommended for newer systems.

53. How do you configure a network interface using the ip command?

Answer: Use the ip addr command:

```
ip addr add 192.168.1.100/24 dev eth0
ip link set eth0 up
```

54. What is the ping command used for?

Answer: ping is used to check the network connectivity between two nodes by sending ICMP echo requests and measuring the response time.

55. How do you check DNS resolution for a domain?

Answer: Use the dig or nslookup command:

```
dig example.com
```
or
```
nslookup example.com
```

56. How do you add a new route in the routing table?

Answer: Use the ip route add command:

```
sudo ip route add 192.168.2.0/24 via 192.168.1.1
```

57. How do you display the routing table?

Answer: Use the ip route show command:

```
ip route show
```

58. What is the iptables command used for?

Answer: iptables is used to set up, maintain, and inspect the tables of IP packet filter rules in the Linux kernel.

59. How do you list the current iptables rules?

Answer: Use the iptables -L command:

```
sudo iptables -L
```

60. How do you allow incoming SSH connections on iptables?

Answer: Use the iptables -A command:

```
sudo iptables -A INPUT -p tcp --dport 22 -j ACCEPT
```

61. How do you save iptables rules?

Answer: Use the iptables-save command:

```
sudo iptables-save > /etc/iptables/rules.v4
```

62. What is the tcpdump command used for?

Answer: tcpdump is a packet analyzer that captures and displays the network traffic passing through a network interface.

63. How do you capture packets on a specific interface using tcpdump?

Answer: Use the tcpdump -i command:

```
sudo tcpdump -i eth0
```

64. What is the ss command used for?

Answer: ss is used to dump socket statistics and display information about network connections.

65. How do you display listening ports using ss?

Answer: Use the ss -tuln command:

```
ss -tuln
```

66. What is the hostname command used for?

Answer: hostname displays or sets the system's hostname.

67. How do you change the system's hostname?

Answer: Use the hostnamectl command:

```
sudo hostnamectl set-hostname newhostname
```

68. What is a shell in Linux?

Answer: A shell is a command-line interpreter that provides a user interface for accessing the operating system's services.

69. What is the difference between bash and sh?

Answer: bash (Bourne Again Shell) is an enhanced version of sh (Bourne Shell) with additional features like command history, tab completion, and improved scripting capabilities.

70. How do you create a shell script?

Answer: Create a text file with the .sh extension and add shell commands to it. For example:

```
#!/bin/bash
echo "Hello, World!"
```

71. How do you make a shell script executable?

Answer: Use the chmod command:

```
chmod +x script.sh
```

72. How do you run a shell script?

Answer: Use the ./ syntax:

```
./script.sh
```

73. What is the purpose of the shebang (#!) in a script?

Answer: The shebang specifies the interpreter to be used to execute the script. For example, #!/bin/bash tells the system to use bash to run the script.

74. How do you define a variable in a shell script?

Answer: Use the = operator without spaces:

```
variable_name="value"
```

75. How do you access a variable in a shell script?

Answer: Use the $ symbol:

```
echo $variable_name
```

76. How do you read user input in a shell script?

Answer: Use the read command:

```
read variable_name
```

77. How do you use an if statement in a shell script?

Answer: Use the if keyword followed by the condition and then keyword. For example:

```
if [ condition ]; then
  commands
fi
```

78. How do you use a for loop in a shell script?

Answer: Use the for keyword followed by the loop variable and in keyword. For example:

```
for i in 1 2 3; do
  echo $i
done
```

79. How do you use a while loop in a shell script?

Answer: Use the while keyword followed by the condition. For example:

```
while [ condition ]; do
  commands
done
```

80. How do you pass arguments to a shell script?

Answer: Use positional parameters $1, $2, etc. For example:

```
./script.sh arg1 arg2
```

81. How do you display the current date and time?

Answer: Use the date command:

```
Date
```

82. How do you display a calendar for the current month?

Answer: Use the cal command:

cal

83. How do you display the current user's username?

Answer: Use the whoami command:

whoami

84. How do you display a list of users currently logged in?

Answer: Use the who command:

who

85. How do you display information about the system?

Answer: Use the uname command. For detailed information:

uname -a

86. What is the uptime command used for?

Answer: uptime displays how long the system has been running, the number of users, and the load average.

87. How do you display the system's load average?

Answer: Use the uptime or top command.

88. What is the dmesg command used for?

Answer: dmesg displays the kernel ring buffer messages, useful for debugging hardware and driver issues.

89. How do you clear the terminal screen?

Answer: Use the clear command:

Clear

90. How do you schedule a one-time job using `at`?

Answer: Use the `at` command followed by the time. For example:

```
echo "command" | at 10:00
```

91. How do you list scheduled `at` jobs?

Answer: Use the `atq` command:

```
atq
```

92. How do you remove a scheduled `at` job?

Answer: Use the `atrm` command followed by the job number:

```
atrm job_number
```

93. How do you schedule a recurring job using `cron`?

Answer: Edit the crontab file using `crontab -e` and add the job with the schedule. For example:

```
0 5 * * * /path/to/script.sh
```

94. How do you list all cron jobs for the current user?

Answer: Use the `crontab -l` command:

```
crontab -l
```

95. How do you remove all cron jobs for the current user?

Answer: Use the `crontab -r` command:

```
crontab -r
```

96. How do you view the system's scheduled cron jobs?

Answer: View the `/etc/crontab` file and files in `/etc/cron.d/`.

97. How do you send a message to all logged-in users?

Answer: Use the `wall` command:

```
echo "message" | wall
```

98. How do you display the amount of free and used memory in the system?

Answer: Use the free command:

```
free -h
```

99. How do you check for available software updates?

Answer: For Debian-based systems, use:

```
sudo apt update
```

For Red Hat-based systems, use:

```
sudo yum check-update
```

100. How do you reboot the system?

Answer: Use the reboot command:

```
sudo reboot
```

101. How do you shut down the system?

Answer: Use the shutdown command:

```
sudo shutdown now
```

102. How do you schedule a system shutdown?

Answer: Use the shutdown command with a time argument:

```
sudo shutdown +10  # Shutdown in 10 minutes
```

103. How do you cancel a scheduled shutdown?

Answer: Use the shutdown -c command:

```
sudo shutdown -c
```

104. How do you enable a service to start at boot?

Answer: Use the systemctl enable command:

```
sudo systemctl enable service_name
```

105. How do you disable a service from starting at boot?

Answer: Use the systemctl disable command:

sudo systemctl disable service_name

106. How do you start a service?

Answer: Use the systemctl start command:

sudo systemctl start service_name

107. How do you stop a service?

Answer: Use the systemctl stop command:

sudo systemctl stop service_name

108. How do you restart a service?

Answer: Use the systemctl restart command:

sudo systemctl restart service_name

109. How do you check the status of a service?

Answer: Use the systemctl status command:

systemctl status service_name

110. What is the purpose of the /etc/systemd/system/ directory?

Answer: It contains systemd unit files for services and targets that are enabled to start at boot.

111. How do you reload systemd manager configuration?

Answer: Use the systemctl daemon-reload command:

sudo systemctl daemon-reload

112. What is the journalctl command used for?

Answer: journalctl is used to query and display logs from the systemd journal.

113. How do you display the latest system logs using journalctl?

Answer: Use the journalctl -e command:

journalctl -e

114. How do you display kernel logs using journalctl?

Answer: Use the journalctl -k command:

journalctl -k

115. How do you display logs for a specific service using journalctl?

Answer: Use the journalctl -u command:

journalctl -u service_name

116. How do you set up a swap file in Linux?

Answer: Use the dd, mkswap, and swapon commands:

```
sudo dd if=/dev/zero of=/swapfile bs=1M count=2048
sudo mkswap /swapfile
sudo swapon /swapfile
sudo chmod 600 /swapfile
```

117. How do you disable a swap file?

Answer: Use the swapoff command:

sudo swapoff /swapfile

118. How do you permanently enable a swap file?

Answer: Add the swap file entry to /etc/fstab:

/swapfile swap swap defaults 0 0

119. How do you check swap usage?

Answer: Use the swapon -s or free -h command:

swapon -s

or

free -h

120. What is the df command used for?

Answer: df displays the amount of disk space used and available on file systems.

121. What is the du command used for?

Answer: du estimates file space usage and displays the disk usage of files and directories.

122. How do you check the disk usage of a specific directory?

Answer: Use the du -sh command:

```
du -sh /path/to/directory
```

123. How do you create a symbolic link?

Answer: Use the ln -s command:

```
ln -s /path/to/target /path/to/link
```

124. How do you create a hard link?

Answer: Use the ln command:

```
ln /path/to/target /path/to/link
```

125. What is the difference between a symbolic link and a hard link?

Answer: A symbolic link points to a file or directory by name, whereas a hard link points directly to the inode of a file. Symbolic links can cross file system boundaries, while hard links cannot.

126. How do you view the contents of a directory?

Answer: Use the ls command:

```
ls /path/to/directory
```

127. How do you view hidden files in a directory?

Answer: Use the ls -a command:

```
ls -a /path/to/directory
```

128. How do you copy files?

Answer: Use the cp command:

cp source_file destination_file

129. How do you move or rename files?

Answer: Use the mv command:

mv source_file destination_file

130. How do you delete files?

Answer: Use the rm command:

rm filename

131. How do you delete directories and their contents?

Answer: Use the rm -r command:

rm -r directory_name

132. How do you change file permissions?

Answer: Use the chmod command:

chmod 755 filename

133. How do you change file ownership?

Answer: Use the chown command:

sudo chown user:group filename

134. How do you change the group ownership of a file?

Answer: Use the chgrp command:

sudo chgrp group filename

135. How do you find files by name?

Answer: Use the find command:

find /path/to/search -name "filename"

136. How do you search for files containing a specific string?

Answer: Use the grep -r command:

grep -r "search_string" /path/to/search

137. What is the `locate` command used for?

Answer: `locate` searches for files in a pre-built database, making it faster than `find`.

138. How do you update the `locate` database?

Answer: Use the `updatedb` command:

```
sudo updatedb
```

139. How do you view the manual page for a command?

Answer: Use the `man` command:

```
man command_name
```

140. How do you view the help information for a command?

Answer: Use the `--help` option:

```
command_name --help
```

141. How do you display the current environment variables?

Answer: Use the `env` command:

```
env
```

142. How do you set an environment variable?

Answer: Use the `export` command:

```
export VAR_NAME=value
```

143. How do you add a directory to the PATH variable?

Answer: Use the `export` command to modify `PATH`:

```
export PATH=$PATH:/path/to/directory
```

144. What is the `alias` command used for?

Answer: `alias` creates shortcuts for commands. For example:

```
alias ll='ls -l'
```

145. How do you remove an alias?

Answer: Use the unalias command:

```
unalias alias_name
```

146. What is the purpose of the /etc/profile file?

Answer: The /etc/profile file contains system-wide environment and startup programs for login shells.

147. What is the purpose of the .bashrc file?

Answer: The .bashrc file contains user-specific aliases and functions for non-login shells.

148. How do you reload the .bashrc file after making changes?

Answer: Use the source command:

```
source ~/.bashrc
```

149. How do you check the syntax of a shell script without executing it?

Answer: Use the bash -n command:

```
bash -n script.sh
```

150. How do you debug a shell script?

Answer: Use the bash -x command to execute the script in debug mode:

```
bash -x script.sh
```

151. What is the diff command used for?

Answer: diff compares the contents of two files line by line and displays the differences.

152. How do you display the differences between two files?

Answer: Use the diff command:

```
diff file1 file2
```

153. What is the patch command used for?

Answer: patch applies changes to files based on a diff file.

154. How do you create a patch file?

Answer: Use the diff -u command:

```
diff -u original_file modified_file > patch_file
```

155. How do you apply a patch file?

Answer: Use the patch command:

```
patch < patch_file
```

156. What is the sort command used for?

Answer: sort sorts the lines of a file or input in ascending or descending order.

157. How do you sort the lines of a file in ascending order?

Answer: Use the sort command:

```
sort filename
```

158. How do you sort the lines of a file in descending order?

Answer: Use the sort -r command:

```
sort -r filename
```

159. What is the uniq command used for?

Answer: uniq reports or filters out repeated lines in a file.

160. How do you remove duplicate lines from a file?

Answer: Use the uniq command:

```
uniq filename
```

161. How do you count the number of occurrences of each line in a file?

Answer: Use the uniq -c command:

```
uniq -c filename
```

162. What is the tee command used for?

Answer: tee reads from standard input and writes to standard output and files.

163. How do you write output to a file and display it on the terminal simultaneously?

Answer: Use the tee command:

```
command | tee output_file
```

164. What is the xargs command used for?

Answer: xargs builds and executes command lines from standard input.

165. How do you use xargs to execute a command on multiple files?

Answer: Use the xargs command with find:

```
find . -name "*.txt" | xargs rm
```

166. What is the awk command used for?

Answer: awk is a powerful programming language for pattern scanning and processing.

167. How do you use awk to print the second column of a file?

Answer: Use the awk command:

```
awk '{print $2}' filename
```

168. What is the sed command used for?

Answer: sed is a stream editor for filtering and transforming text.

169. How do you use sed to replace all occurrences of a string in a file?

Answer: Use the sed command:

```
sed 's/old_string/new_string/g' filename
```

170. How do you use sed to delete lines matching a pattern?

Answer: Use the sed command:

```
sed '/pattern/d' filename
```

171. What is the cut command used for?

Answer: cut removes sections from each line of files.

172. How do you use `cut` to extract the first column of a file?

Answer: Use the `cut` command:

```
cut -d' ' -f1 filename
```

173. What is the `tr` command used for?

Answer: `tr` translates or deletes characters from standard input.

174. How do you use `tr` to convert lowercase to uppercase?

Answer: Use the `tr` command:

```
echo "text" | tr '[:lower:]' '[:upper:]'
```

175. How do you use `tr` to remove all digits from a string?

Answer: Use the `tr` command:

```
echo "text123" | tr -d '[:digit:]'
```

176. What is the `find` command used for?

Answer: `find` searches for files and directories based on various criteria.

177. How do you use `find` to search for files modified in the last 7 days?

Answer: Use the `find` command:

```
find /path/to/search -type f -mtime -7
```

178. How do you use `find` to search for files larger than 100MB?

Answer: Use the `find` command:

```
find /path/to/search -type f -size +100M
```

179. How do you use `find` to execute a command on each found file?

Answer: Use the `find -exec` command:

```
find /path/to/search -type f -name "*.log" -exec rm {} \;
```

180. What is the `which` command used for?

Answer: `which` locates a command by searching the directories in the `PATH`.

181. How do you use `which` to find the location of the `ls` command?

Answer: Use the `which` command:

```
which ls
```

182. What is the `time` command used for?

Answer: `time` measures the execution time of a command.

183. How do you use `time` to measure the execution time of a command?

Answer: Use the `time` command:

```
time command
```

184. What is the `cron` daemon?

Answer: `cron` is a time-based job scheduler that runs tasks at specified intervals.

185. What is a `crontab` file?

Answer: A `crontab` file contains the schedule and commands for `cron` jobs.

186. How do you edit the `crontab` file for the current user?

Answer: Use the `crontab -e` command:

```
crontab -e
```

187. How do you list the `crontab` entries for the current user?

Answer: Use the `crontab -l` command:

```
crontab -l
```

188. What is the syntax for a `crontab` entry?

Answer: The syntax is `minute hour day month day-of-week command`. For example:

```
0 5 * * * /path/to/script.sh
```

189. How do you use `grep` to search for a pattern in multiple files?

Answer: Use the `grep` command with wildcard:

```
grep "pattern" /path/to/files/*.txt
```

190. How do you use `grep` to search for a pattern ignoring case?

Answer: Use the `grep -i` command:

```
grep -i "pattern" filename
```

191. How do you use `grep` to search for an exact word?

Answer: Use the `grep -w` command:

```
grep -w "word" filename
```

192. How do you use `grep` to display line numbers?

Answer: Use the `grep -n` command:

```
grep -n "pattern" filename
```

193. How do you use `grep` to search recursively?

Answer: Use the `grep -r` command:

```
grep -r "pattern" /path/to/search
```

194. What is the `egrep` command?

Answer: `egrep` is equivalent to `grep -E`, enabling the use of extended regular expressions.

195. How do you use `egrep` to search for multiple patterns?

Answer: Use the `egrep` command with patterns separated by `|`:

```
egrep "pattern1|pattern2" filename
```

196. What is the `fgrep` command?

Answer: `fgrep` is equivalent to `grep -F`, searching for fixed strings rather than regular expressions.

197. How do you use `fgrep` to search for a fixed string?

Answer: Use the `fgrep` command:

```
fgrep "fixed_string" filename
```

198. How do you use `cut` to extract a specific field from a CSV file?

Answer: Use the `cut -d` command with the delimiter and field number:

```
cut -d',' -f2 filename.csv
```

199. What is the `tail` command used for?

Answer: `tail` displays the last part of a file.

200. How do you use `tail` to monitor a file in real-time?

Answer: Use the `tail -f` command:

```
tail -f filename
```